

**ABSTRACT**

A process and system for processing a thin film sample are provided. In particular, a beam generator can be controlled to emit at least one beam pulse. The beam pulse is then masked to produce at least one masked beam pulse, which is used to irradiate at least one portion of the thin film sample. With the at least one masked beam pulse, the portion of the film sample is irradiated with sufficient intensity for such portion to later crystallize. This portion of the film sample is allowed to crystallize so as to be composed of a first area and a second area. Upon the crystallization thereof, the first area includes a first set of grains, and the second area includes a second set of grains whose at least one characteristic is different from at least one characteristic of the second set of grains. The first area surrounds the second area, and is configured to allow an active region of a thin-film transistor ("TFT") to be provided at a distance therefrom.

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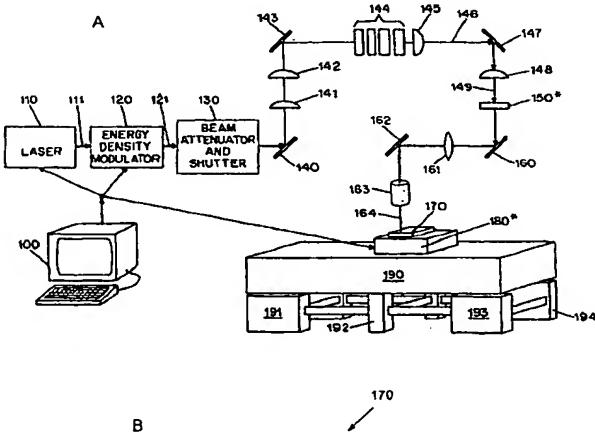
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*[Continued on next page]*

(54) Title: PROCESS AND SYSTEM FOR LASER CRYSTALLIZATION PROCESSING OF FILM REGIONS ON A SUBSTRATE TO MINIMIZE EDGE AREAS, AND STRUCTURE OF SUCH FILM REGIONS



(57) **Abstract:** A process and system for processing a thin film sample are provided. In particular, a beam generator can be controlled to emit at least one beam pulse. The beam pulse is then masked to produce at least one masked beam pulse, which is used to irradiate at least one portion of the thin film sample. With the at least one masked beam pulse, the portion of the film sample is irradiated with sufficient intensity for such portion to later crystallize. This portion of the film sample is allowed to crystallize so as to be composed of a first area and a second area. Upon the crystallization thereof, the first area includes a first set of grains, and the second area includes a second set of grains whose at least one characteristic is different from at least one characteristic of the second set of grains. The first area surrounds the second area, and is configured to allow an active region of a thin-film transistor ("TFT") to be provided at a distance therefrom.

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